

U.S. Army Corps of Engineers, Kansas City District



Appendix C.

U.S. Fish and Wildlife Service Coordination Act Report

**City of Topeka, Kansas
Flood Risk Management Study
Draft Environmental Assessment**



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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kansas Ecological Services Office
2609 Anderson Avenue
Manhattan, Kansas 66503-6172



March 16, 2007

Dr. Christopher White
U.S. Army Corps of Engineers, Kansas City District
Rm 843, PM-PR
601 E. 12th Street
Kansas City, MO 64106

Dear Dr. White:

Enclosed is our Final Fish and Wildlife Coordination Act Report for the Topeka Local Flood Protection Project (Topeka, Kansas). This FCAR was prepared in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). It constitutes the report of the Secretary of the Interior on the project within the meaning of Section 2 (b) of this Act.

This report is intended to accompany the U.S. Army, Corps of Engineers Environmental Assessment on the proposed project.

Please note the following changes in the FCAR from the Draft CAR.

- * Recommendations 2 and 4 have been modified.

- * Recommendation 9 has been added.

- *A short discussion of the woodland and native vegetation impacts at the South Topeka Unit underseepage berm and the proposed mitigation areas has been added to the Executive Summary and Introduction sections.

- *Expanded the discussion of the importance of native vegetation in the Terrestrial Resources Section (page 6).

- *The Fish and Wildlife Resources With the Project has been modified to reflect the new recommendation #9 (page 21).

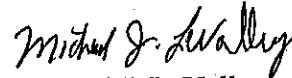
- *The Invasive Species Best Management Practice recommendation has been modified. This is located under the Mitigation Discussion Section (page 23).

We are also transmitting a copy of this Final report to the Kansas Department of Wildlife and Parks for review and have requested a letter of concurrence if they generally agree with our report. We will forward their letter of concurrence upon receipt for incorporation within our

report as an appendix.

If you have any questions concerning this final report, please contact Ms. Susan Blackford, of my staff, at 785 539-3474 ext. 102.

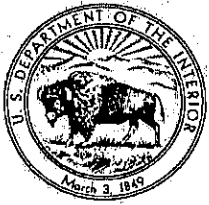
Sincerely,

A handwritten signature in cursive script that reads "Michael J. LeValley".

Michael J. LeValley
Field Supervisor

Enclosure

MJL/shb



FINAL FISH AND WILDLIFE
COORDINATION ACT REPORT
FOR THE
TOPEKA, KANSAS
LOCAL FLOOD PROTECTION PROJECT

PREPARED FOR THE

The Kansas City District
U.S. Army Corps of Engineers
Kansas City, Missouri

Prepared by

U.S. Fish and Wildlife Service
Kansas Ecological Services Field Office
Manhattan, Kansas
March, 2007

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EXECUTIVE SUMMARY

The Kansas River flood of 1993 caused flood damage to industrial and other properties inside the Topeka, Kansas Local Flood Protection Project (Topeka LFPP) levees due to internal runoff and seepage. The existing levees and other flood protection works provide protection for about the 100-year event. The proposed improvements consist of land side underseepage berms, manhole foundation heel extensions, fill behind floodwalls, new pressure relief wells, gatewells, sluice gates, and floodwall replacements. The Fairchild Pump Station will be abandoned in place. As part of the abandonment, the Corps will remove the above grade structure and fill the below-grade structure and outlet lines with flowable fill. The Madison Street Pump Station will be removed and replaced. No concerns were identified in the Soldier Creek or Auburndale Units. The South Topeka Unit underseepage berm potentially would have the greatest impacts. The work for this unit will impact approximately 5 acres of woodland habitat landward of the levee for construction of the underseepage berm. This loss of woodland habitat is proposed to be mitigated at the borrow/mitigation area west of the North Topeka Unit which would restore approximately 10 acres of cropland and bare ground to a woodland riparian area with native trees, shrubs, and grasses.

Riparian vegetation is the only significant resource anticipated to be impacted by the proposed flood control work. The few, remaining areas of native vegetation represent valuable wildlife habitat. There are many areas of cropland in close proximity to the project sites, including within some of the proposed borrow sites. Areas of native vegetation should be avoided if possible or mitigated.

RECOMMENDATIONS

1. Riparian and wetland habitats should be avoided to the maximum extent practicable when selecting borrow sites for the proposed levee improvements. Compensatory mitigation should be undertaken for unavoidable impacts. Since channelization, levee construction and floodplain development have already resulted in dramatic loss of riparian and wetland habitats in the Kansas River basin within the project area, the Corps should focus on bare or cropland areas for borrow.
2. Levees and levee easements should be seeded with native, warm-season grasses such as buffalo grass (*Buchloe dactyloides*). Buffalo grass is a drought tolerant, perennial, native, turf grass that reaches a height of 8 – 10 inches.
3. The Corps should create wetland mitigation habitat to compensate for the loss of wetland acreage from construction of the projects in accordance with the FWS Region 6 Wetland Mitigation Guidelines, generally at a minimum of 1.5:1 ratio for emergent wetland and at a 2:1 ratio for forested wetland. If farmed wetland is directly impacted by borrow activities it should be mitigated at a 1.0 to 1.0 ratio.

4. Removal of woodlands and other native vegetation should be avoided where possible. If avoidance is not possible a mitigation plan should be developed in coordination with the U.S. Fish and Wildlife Service (Service), Environmental Protection Agency (EPA), and the Kansas Department of Wildlife and Parks (KDWP). Woody vegetation and native grasses should be replaced by establishing two acres of native vegetation for every acre impacted.

5. Best Management Practices to prevent the transport of invasive species to or from the construction sites should be included as an integral component of the project.

6. Establish native vegetation riverward of levee segments where riparian woodlands are sparse or nonexistent or where invasive species, e.g. reed canary grass, have become established.

7. All disturbed areas should be immediately planted with native vegetation following construction to prevent erosion and the establishment of invasive species.

8. The potential use of borrow sites for wetland and aquatic habitat enhancement and public recreation should be investigated with the project sponsors and borrow site owners. The City of Topeka is interested in developing a greenway and public access to the Kansas River within the project limits.

9. If possible, establish mitigation areas prior to the onset of impacts from the project to lessen the impacts to wildlife from habitat loss.

INTRODUCTION

This Final Fish and Wildlife Coordination Act Report (FCAR) is submitted pursuant to the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), and the fiscal year 2005 Scope-of-Work Agreement between the U.S. Fish and Wildlife Service (Service) and the U.S. Army Corps of Engineers, Kansas City District (Corps) for the City of Topeka Local Flood Protection Project, Shawnee County, Kansas (LFPP). The FCAR is designed to accompany and is to be incorporated into the Corps' Environmental Assessment on the proposed project. The Service has previously provided a draft Planning Aid Letter (PAL) dated August 29, 1997, a final PAL dated September 4, 1997, and an update to the final PAL dated December 15, 2005.

This study was authorized under authority of Section 205 of the Flood Control Act of 1948, as amended.

Following the flood of 1951, that caused approximately \$34,000,000 in damages, an extensive array of eight principal units were built to protect Topeka against future floods. Construction features include some 41.6 miles of levees, over 1,000 feet of flood wall, riprap of levees, five separate systems of relief wells, 17.1 miles of modified channels, 11 pumping plants to take care of interior drainage and relief well discharge, four railroad bridges, and major alterations to two Kansas River railway bridges. Construction of project features required extensive alteration of Topeka's existing street and highway bridges. The cost of constructing all complete units of the Topeka LFPP was about \$21,175,000 Federal and \$10,383,000 non-Federal. In addition to the local protection project, the city is now protected by an array of upstream Federal flood control reservoirs on tributaries to the Kansas River Basin. Projects that have come on-line since 1951 include Tuttle Creek Reservoir, Milford Reservoir, Wilson Reservoir, and Glen Elder Reservoir.

The present identified flood problems that surfaced after the flood of 1993 include flood damage to industrial and other properties and damage inside the levees caused by internal runoff and seepage. The existing levees and other flood protection works provide protection for about the 100-year event.

Issues identified in the Topeka LFPP consist of geotechnical and structural concerns. Geotechnical concerns are related to underseepage beneath the levee which may occur during high flow events. If underseepage is allowed to surface on the land side uncontrolled during a flood, it can create a failure of the levee foundation by piping. Underseepage pressures can be countered using either underseepage berms (additional soil placed on the ground surface) to prevent flow to the surface, or by pressure relief wells that provide a controlled path for the underseepage. Berms are usually the preferred method based on lower installation cost and maintenance needs, but require more real estate for installation and borrow areas. In locations where real estate is not available, relief wells can be installed.

Structural concerns are generally related either to uplift pressures or stability weaknesses. Similar to underseepage, uplift pressures are caused by high water on one side of the levee and can severely affect those underground structures located near the levee. This includes manholes, pump stations, and drainage structures (gatewells, sluice gates, and pipes). The easiest method to counter uplift pressures is by installing heel extensions to the structure in question, which is essentially the pouring of a concrete collar around the base of the structure. This may require extensive excavation around the structure. If the structure cannot be sufficiently modified to counteract the pressures, it would need to be replaced, or if no longer a necessary part of the protection system, abandoned.

Stability concerns have been identified at several of the concrete floodwall and closure gap structures. The direct pressure of high water on one side of the structure during a flood may cause either sliding, overturning, or breaking of the structure. The primary method to counter this concern is the installation of a stability berm on the land side of the structure to provide additional support. Structures that cannot be corrected using stability berms require replacement.

No new levees have been proposed for this project. The proposed improvements consist of land side underseepage berms, manhole foundation heel extensions, fill behind floodwalls, new pressure relief wells, and gatewell, sluice gate, and floodwall replacements. The Fairchild Pump Station will be abandoned in place, with removal of the above grade structure and filling of the below-grade structure and outlet lines with flowable fill. The Madison Street Pump Station will be removed and replaced. No concerns were identified in the Soldier Creek or Auburndale Units. The Corps has estimated the amount of needed borrow to be in excess of 281,000 cubic yards.

The South Topeka Unit underseepage berm potentially would have the greatest impacts. The work for this unit will impact approximately 5 acres of woodland habitat landward of the levee for construction of the underseepage berm. This loss of woodland habitat is proposed to be mitigated at the borrow/mitigation area west of the North Topeka Unit which would restore approximately 10 acres of cropland and bare ground to a woodland riparian area with native trees, shrubs, and grasses.

Most of the borrow will be used to construct underseepage and stability berms. Work concerning manholes, pump stations, and floodwalls will occur in previously disturbed areas and, for the most part, urbanized areas and will require little, if any borrow. The only alternatives identified by the Corps for the project is the source of borrow. The alternatives consist of 1) the use of up to four possible borrow areas in close proximity to levee areas which will need borrow or 2) the use of commercially obtained borrow.

DESCRIPTION OF THE STUDY AREA

The project is located in Topeka, Shawnee County, Kansas, in the northeastern part of the State. The project area encompasses levees on both sides of the Kansas River beginning

just east of the sewage treatment plant to the western edge of Topeka near North Highway 75 (approximate River Miles 77.6 to 88.6) (Figure 1).

Topeka is the State Capitol with a US Census 2000 estimated population of 122,377 (Retrieved September 7, 2006 from <http://topeka.areasconnect.com/statistics.htm>). Topeka is located on the banks of the Kansas River about 84 miles above the junction with the Missouri River. The total drainage area of the Kansas River basin above Topeka is approximately 56,720 square miles. Mean annual discharge is approximately 5,871 cfs. The river flows west to east through the center of the city. Although much of the City south of the river is above flood heights, important railroad and industrial developments, the municipal water works, a sewage treatment plant, and the municipal airport are located on the 3,300-acre flood plain along the south bank of the river. Shunganunga Creek and its tributary Deer Creek are the primary tributaries draining south and southwestern Topeka. Shunganunga Creek enters the Kansas River just to the east of Philip Billard Airport. The north Topeka area, consisting of approximately 5,100 acres, includes business, residential, industrial, and specialized farm developments. Three tributaries enter the Kansas River within this area. They are Soldier, Halfday, and Indian Creeks.

The levees were built close to the Kansas River constricting its floodplain and limiting the amount of riparian habitat. In many areas the levees were built near the top of the banks of the river. At one of the narrowest points near downtown Topeka, the area between the levees on opposite sides of the Kansas River is less than one-half mile wide. The areas between the river and levees contain much of the remaining available wildlife habitat in the project area. The proposed borrow areas are located between the levees and the river as close as possible to the work sites. The Corps is proposing four borrow areas labeled as Waterworks/North Topeka borrow area, South Topeka borrow area, East Oakland and West Oakland borrow area. As an alternative, the Corps is also evaluating the use of commercially obtained borrow in which the source may be from river dredging.

The Soil Survey, Shawnee County, Kansas (USDA 1970) identifies the primary soil associations of the project area as the Eudora-Muir, Martin-Sogn, and Pawnee-Shelby-Morrill associations. Most of the proposed borrow areas occur in the Eudora-Muir association which is deep, well-drained or moderately well drained soils that have a clay or clay loam subsoil on benches in the Kansas River Valley. The other two soil associations are described in the same manner except they are found on uplands.

Terrestrial Resources

Most of the vegetation in the study area has been greatly impacted by urban development and agricultural land clearing. The major land use of the project area is urban, with cropland being the second major land use (Figure 2). There are a few small patches of native prairie in or near the project area and pockets of riparian woodlands. The area between the levees, which includes the Kansas River, contains much of the remaining

wildlife habitat. The remaining areas of native vegetation provide vital habitat for local wildlife, and migrating songbirds. The lack of native vegetation is a limiting factor for the populations of these species. As the establishment of native vegetation may take years, or even decades for woodlands, the removal of existing areas may cause further declines in the numbers of individuals and the numbers of species that are dependent on these areas. Mitigating the loss of these areas at a 2:1 ratio offers some compensation for the temporal loss of habitat and allows space for planting an a greater number of trees than were removed in acknowledgment that many of those planted will not survive to maturity.

The Kansas River provides important habitat for wildlife in an area in which the primary landcover types are urban and agricultural. The river provides waterfowl and shorebird resting feeding, and staging areas during migration. In spring and summer, sandbars and islands provide protected feeding and potential nesting sites for Canada geese and shorebirds. Stream banks provide habitat for bank swallows, belted kingfishers, beaver, and muskrat. Many riparian areas are sparsely vegetated with "weedy" annuals or mowed grass.

In a few areas the riparian vegetation is more robust consisting of native tree species like cottonwood, willow, sycamore, American elm, and maple, along with grasses, shrubs, and herbaceous species. These riparian areas provide food and cover for many neotropical migrant birds, and wintering habitat for the bald eagle. Currently, riparian woodlands in the project area consist mainly of small pockets of trees riverward of the levees.

The riparian woodland that remains along the Kansas River is the highest quality habitat in the Topeka area. It offers the greatest vegetative diversity and degree of interspersion with other habitat types, which is important to many wildlife species. Additionally, riparian woodlands are important for preventing streambank erosion; intercepting sediments and pollutants before entering streams; providing shade and leaf detritus to the stream; and providing recreational opportunities through fishing, nature study, and wildlife observation.

White-tail deer, raccoons, and other wildlife also use riparian habitats. Linear corridors of habitat, such as that found along the Kansas River, allow animals to disperse throughout their ranges, preventing genetic isolation and allowing the reestablishment of populations in areas, like Topeka, where wildlife may have been eliminated in the past.

As indicated previously, Soldier and Shunganunga creek have been channelized and contained within a levee system within north and south Topeka respectively. The new channels were cut through agricultural fields and the raw earth of the new levee banks and stream channel were planted to grasses. There are a few individual trees on the banks of the stream but no area remains that would qualify as riparian woodland.

Reptiles, amphibians and birds are the local wildlife most likely to be impacted from the project with most of the impacts due to the taking of borrow.

Thompson and Ely (1989) report that 424 bird species have been recorded in Kansas. The state's central location is an important contributing factor to this large species count, containing both eastern deciduous forest and the central grasslands and it is on a major flyway. Kansas is also a wintering area for far-northern birds, as well as a breeding area for typically southern species. Our major rivers funnel in stragglers from the Rocky Mountains. Many migratory songbird species are dependent on woodlands, and especially riparian woodlands, for food, shelter, and raising of young. As a prairie state, bird species dependent on grasslands are predominant in Kansas. However, as a group, grassland birds are declining at a faster rate than any other group of birds in North America.

Reptiles and amphibians found in Shawnee County include the tiger salamander, plains spadefoot, American toad, Woodhouse's toad, Blanchard's cricket frog, western chorus frog, gray treefrog, plains leopard frog, bullfrog, plains narrowmouth toad, common snapping turtle, ornate box turtle, western painted turtle, red-eared slider, midland smooth softshell turtle, western spiny softshell turtle, ground skink, five-lined skink, great plains skink, prairie skink, prairie-lined racerunner, western worm snake, prairie ringneck snake, rough green snake, eastern yellowbelly racer, black rat snake, bullsnake, prairie kingsnake, common kingsnake, milk snake, red-sided garter snake, lined snake, Texas brown snake, Graham's crayfish snake, northern water snake, copperhead, massasauga, and timber rattlesnake.

Aquatic Resources

Aquatic resources of the area consist of the Kansas River and the north or left bank tributary stream Soldier Creek and the right bank tributary Shunganunga Creek to the south. The quality of these streams varies according to a number of factors.

Ninety-nine species of fish inhabit the Kansas River basin of which at least 19 are probably introduced, non-native species. The distribution and abundance of most species have changed markedly in this century in response to reservoir construction and land use changes. Cross and Collins (1995) state that species found in the lower Kansas River and within the immediate area of Topeka are gizzard shad, bigmouth buffalo, black buffalo, shorthead redhorse, channel and flathead catfish, freshwater drum, longnose gar, shortnose gar, river carpsucker, silver chub, speckled chub, emerald shiner, red shiner, sand shiner, goldeye, plains minnow and common carp (an introduced species), shovelnose sturgeon, American eel, speckled chub, western silvery minnow, sturgeon chub, creek chub, blue sucker, green sunfish, orangespot sunfish, largemouth bass, white crappie, and orangethroat darter. A Kansas State University fish survey of the Kansas River between River Miles 75 and 79 found most of the above fish. The dominant species found during the survey were river carpsucker, red shiner, sand shiner, and western mosquitofish. In addition, the survey found two species, the blue sucker and the quillback, that are listed as State of Kansas Species in Need of Conservation (SINC) (Craig Paukert, pers. comm., September 25, 2006).

In a 1977 report, Kansas River Basin, Kansas, Preliminary Stream Survey, by the Kansas Forestry, Fish and Game Commission, angler utilization from approximately Junction City to Kansas City was 29,909 angler days per year. With increasing population during the last 20 years within the river corridor from Junction City to Kansas City, recreation and angler days have, no doubt, also increased.

The proposed flood control improvements will take place within a reach of the Kansas River identified by the Kansas Water Authority in the 1992 State Water Plan, as suitable for development, management, and promotion for its recreational opportunities. The river that divides Topeka, however, is under utilized by the resident population. This may be due, in part to a lack of adequate access or development of park lands riverward of the flood control levee system. Several boat launching facilities and fisherman-access sites have been constructed along the Kansas River in recent years. One access site, named the Topeka Seward Avenue Kaw River Access, has been developed in the project area. Boating use of the river through the Topeka area is problematic due to the hazard presented by the Topeka Low Head Dam. Portage around this hazard is difficult.

Soldier Creek, a north bank tributary, joins the Kansas River at Topeka. The narrow watershed of approximately 157 square miles, traverses southern Nemaha, Jackson, and northern Shawnee Counties flowing in a south-southeasterly direction. Approximately one half of the present Pottawatomie Indian Reservation lies in the lower Soldier Creek Basin.

The mainstem of Soldier Creek has been extensively altered in the lower reach for flood control purposes. An extensive array of levees, channelization and other stream alteration work has been completed but stream degradation caused by these stream alterations has persisted. The channel degradation, which includes both widening and deepening of the stream channel through erosion, has slowly moved upstream endangering roads, bridges, and railroads and destroying much of the remaining stream-side vegetation. In response to the degradation, grade control structures have been installed, to help slow down and perhaps stop the severe erosion, scouring, silting, and water quality degradation that has occurred.

Shunganunga Creek originates approximately 2.5 miles west of Sherwood Lake. From Sherwood Lake it flows northeasterly across the city of Topeka, and joins the Kansas River about 2.25 miles east of the city. West of Topeka, the banks are heavily wooded with mature trees and mixed shrubs. From 15th street east, the channelized banks are devoid of trees, but include a fair cover of mixed weeds and grasses. Land use of this watershed is estimated to be 95% urban development. The remaining five percent is cultivated to primarily milo and soybeans. Urbanization and channelization have made most of the area inaccessible or unattractive for fishing.

Soldier and Shunganunga Creek have been classified as moderate fishery resource (Value Class III) by the Kansas Department of Wildlife and Parks, (formerly the Kansas Fish and Game Commission). There are several important game fish present in these streams including catfish, crappie, and walleye. Due to channelization, these streams have

shallow water, steep mud banks, and very little diversity within the city limits. In this lower reach most fishing is confined to backwater areas of the Kansas River at the mouth of each stream. In its upper reach Soldier Creek still supports specialized species including stoneroller, bluntnose minnow, sand shiner, and slender madtom.

Wetlands

Wetlands on the Kansas River floodplain in close proximity to Topeka are small and contain water seasonally. During drier years most wetlands are farmed. Therefore, vegetation diversity is relatively low and consists mostly of annual species such as smartweed and foxtail barley. These wetlands are important for the production of invertebrates and serve as habitat for amphibians. When not cropped, they provide habitat for cottontail rabbit, ring-neck pheasant, and many non-game animals. Wetlands are present in the cut-off remnants of the old Soldier Creek and Shunganunga Creek channels. These wetlands consist of narrow linear habitats with prairie cordgrass, smartweed, switchgrass, and cattails in the wettest areas. Remnants of the riparian woodlands that covered their banks also persist in a few areas, particularly the old channel of Shunganunga Creek on the Billard Airport grounds and at the mouth of the old Soldier Creek where it enters the Kansas River.

The National Wetland Inventory database indicates the existence of wetlands within the project area (Figures 3 – 8). Wetland impacts should be mitigated in accordance with the FWS Region 6, Wetland Mitigation Guidelines presented in the Mitigation Discussion section.

Federal Threatened and Endangered Species

Section 7 of the Endangered Species Act, 87 Stat. 884, as amended, requires Federal Agencies to ask the Secretary of the Interior, acting through the U.S. Fish and Wildlife Service, whether any listed or proposed endangered species may be present in the area of each Federal construction project. If the project may effect listed species, the Corps of Engineers should initiate formal Section 7 consultation with this office. If there will be no effect, or if the Fish and Wildlife Service concurs in writing that there will be beneficial effects, further consultation is not necessary.

There are three federally-listed species that may occur within the project area. The bald eagle (*Haliaeetus leucoccephalis*), federally-listed as threatened, frequents reservoirs and large rivers in Kansas during the winter months. Perry Reservoir (northeast of Topeka), Clinton Reservoir (southeast of Topeka), and the Kansas River also have nesting pairs of bald eagles, with parents and young remaining in the area throughout the spring and summer months. Eagles use large trees and snags in close proximity to water. If any trees at least 50 feet tall and/or 24 inches diameter at breast height (dbh) or 10 or more trees greater than 12 inches dbh are to be removed riverside of the levees, consultation with the Service may be required pursuant to section 7 of the Endangered Species Act (16 U.S.C. 1531 et seq.).

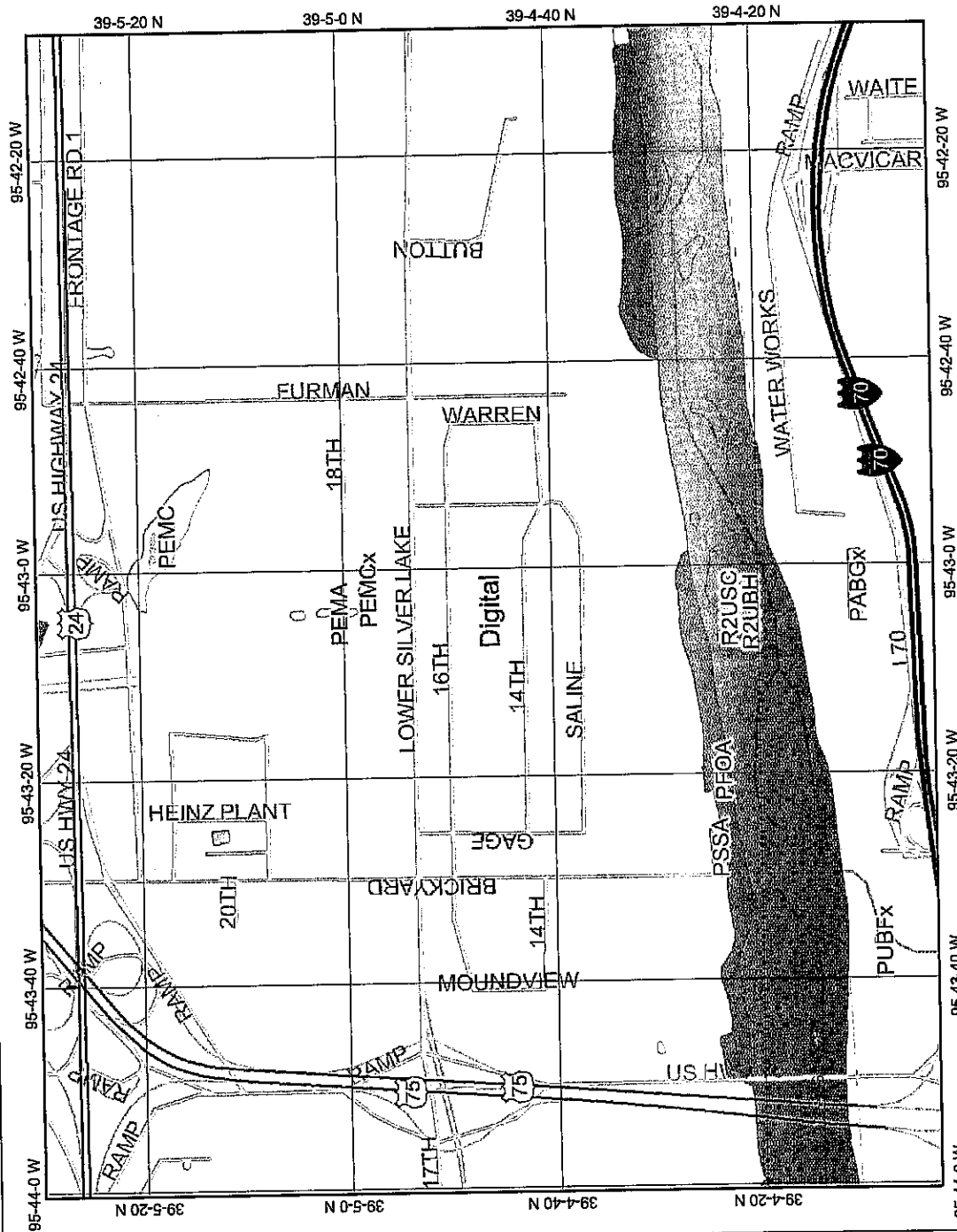
Topeka LFPP Wetlands



Legend

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine
- NHD Streams
- Urban Areas 300K

Scale: 1:25,000



Map center: 39° 4' 46" N, 95° 43' 4" W

Figure 3. Map includes the Waterworks Unit, North Topeka Unit, and the Waterworks-North Topeka Borrow/Mitigation Area

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

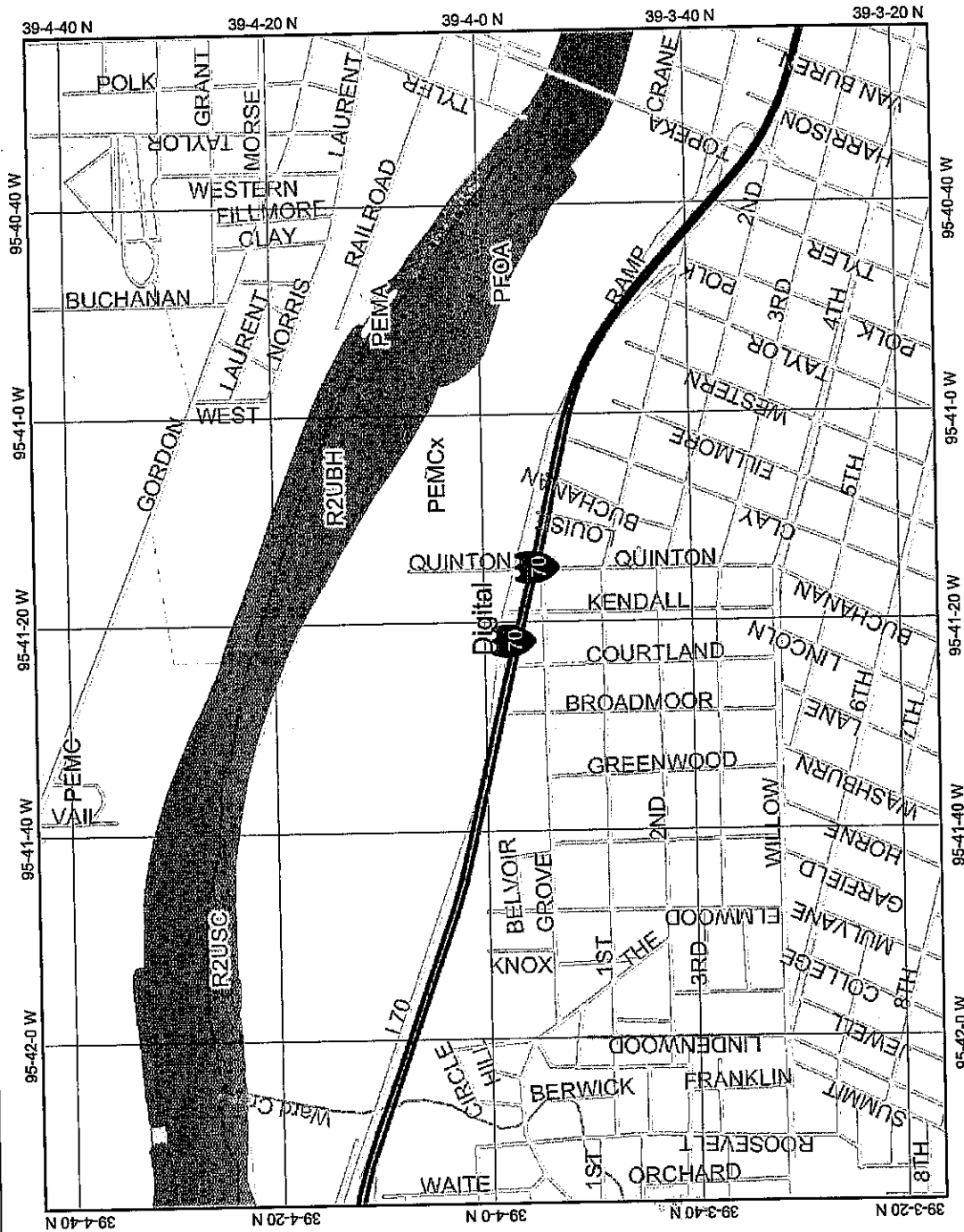
Topeka LFPP Wetlands



Legend

- Interstate
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- Freshwater Pond
- Lake
- Other
- Riverine
- NHD Streams
- Urban Areas 300K

Scale: 1:25,000



Map center: 39° 4' 0" N, 95° 41' 20" W

Figure 4. Map includes the South Topeka Borrow area and the western South Topeka Unit

This map is a user generated static output from an internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Topeka LFPP Wetlands

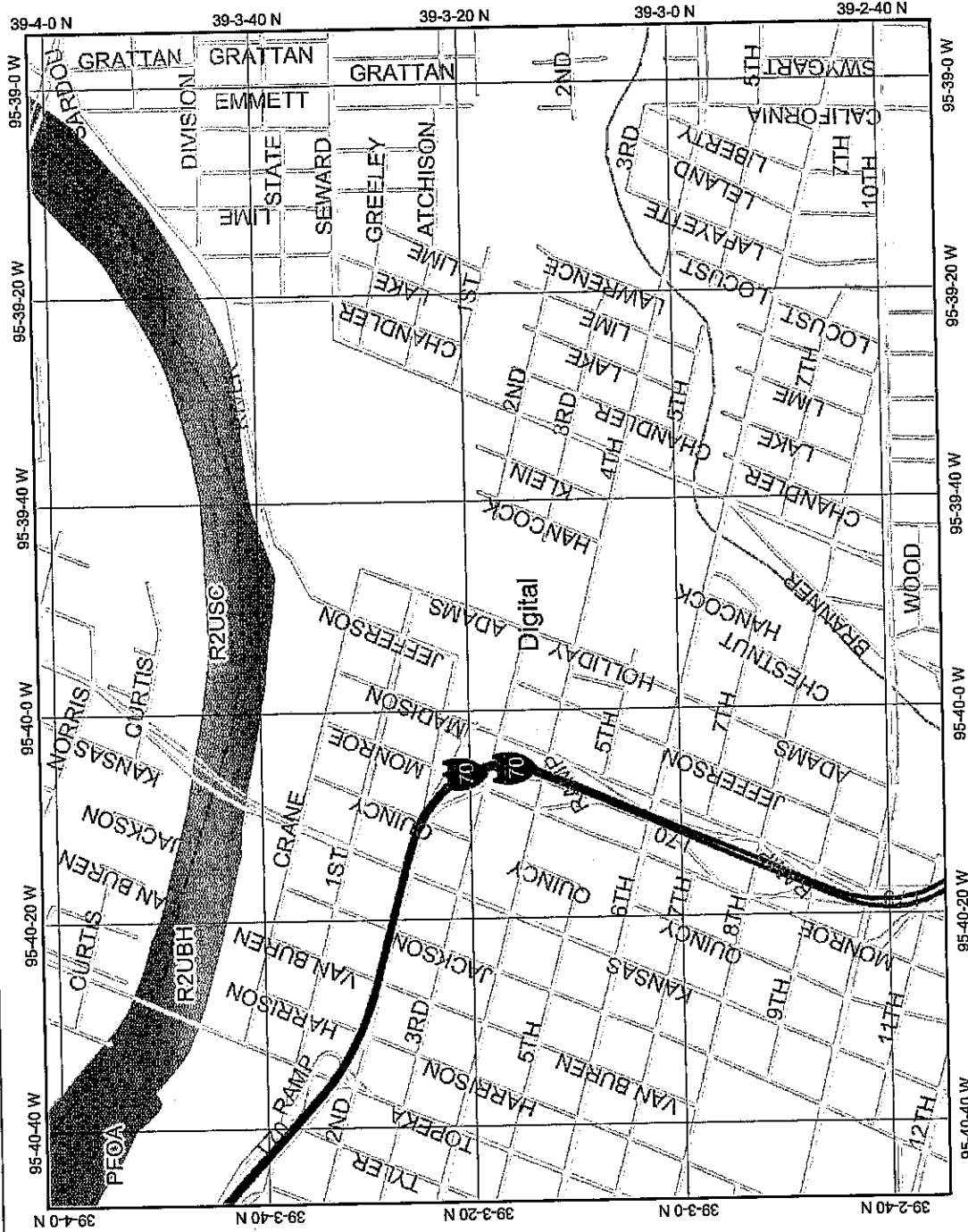


Legend

- Interstate
- Major Road
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine
- NHD Streams
- Urban Areas 300K



Scale: 1:25,000



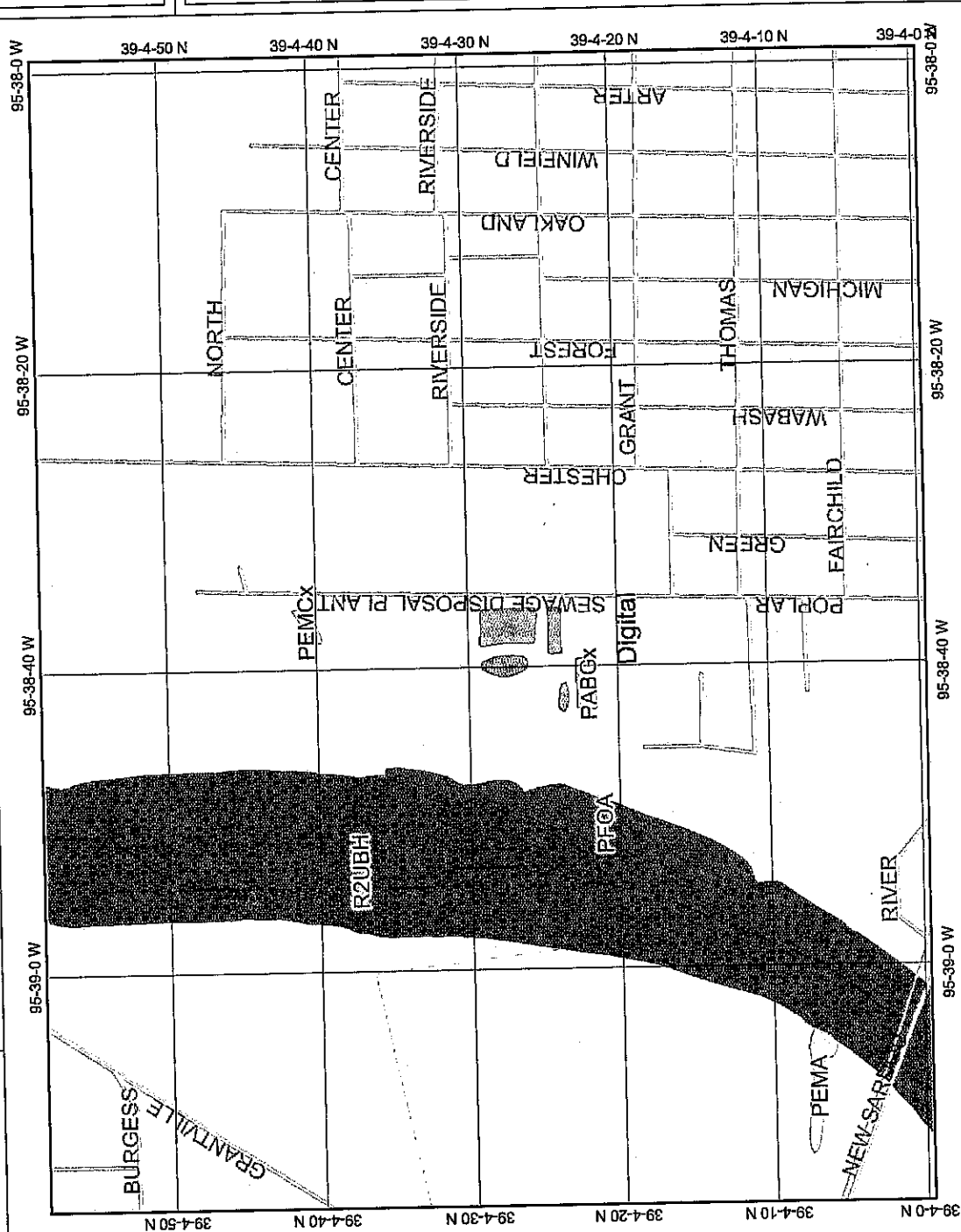
Map center: 39° 3' 18" N, 95° 39' 51" W

Figure 5. Map includes the eastern South Topeka Unit and the southern Oakland Unit

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Interstate
Major Roads
Other Road
Interstate
State highway
US highway
Roads
Lower 48 Wetland P
Estuarine and Marine D
Estuaries and Marine W
Freshwater Emergent W
Freshwater Forested/S
Freshwater Pond
Lake
Other
Riverine
NHD Streams
Urban Areas 300K

Scale: 1:17,000



Map center: 39° 4' 29" N, 95° 38' 37" W

Figure 6. Map includes the northern Oakland Unit

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

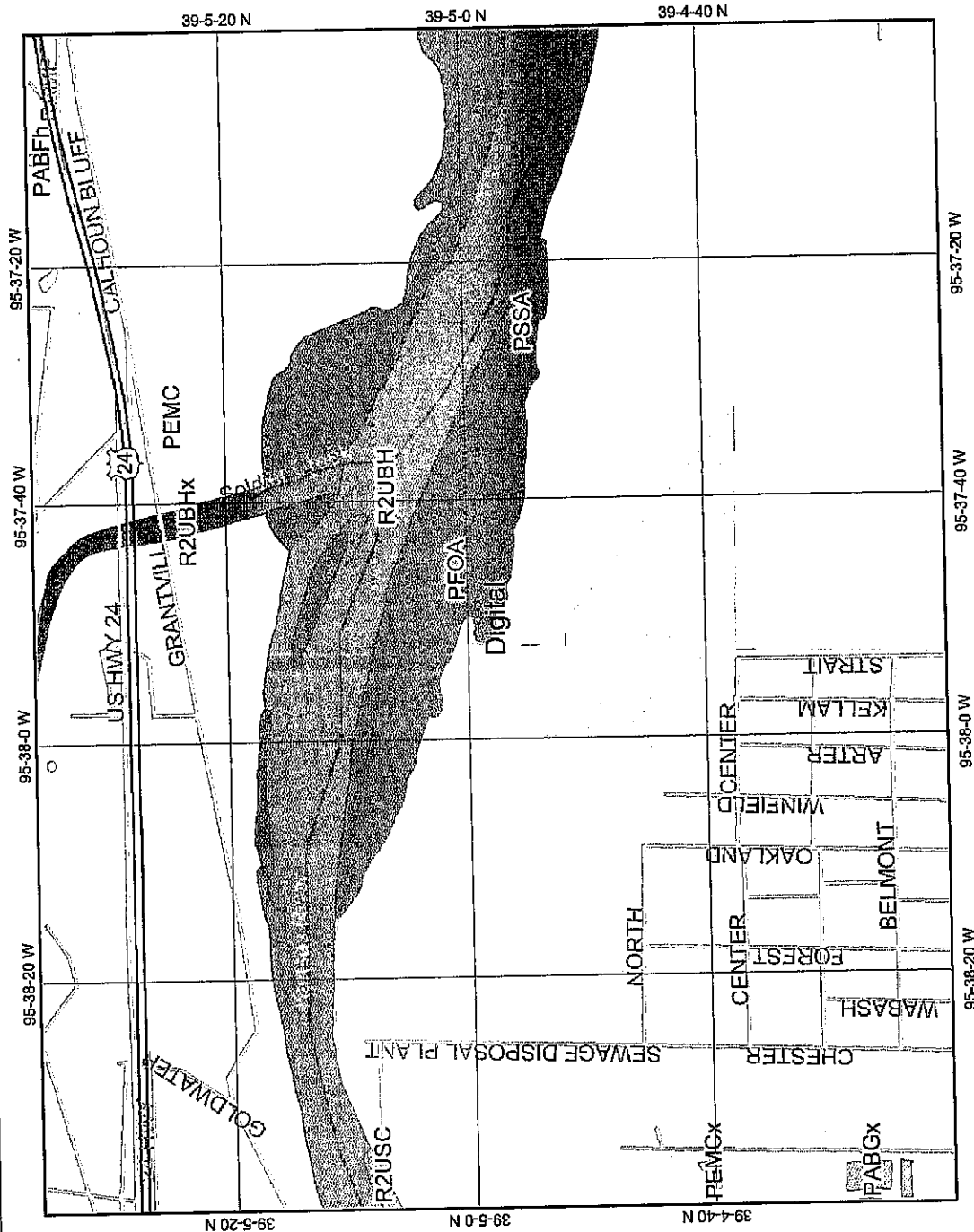
Topeka LFP Wetlands



Legend

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverline
- NHD Streams
- Urban Areas 300K

Scale: 1:22,000



Map center: 39° 4' 58" N, 95° 37' 50" W

Figure 7. Map includes the western Oakland Borrow Area

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

In addition, if any project activity appears likely to harass or disturb any bald eagle observed at or near any construction site, this office should be notified prior to commencement of the activity, so that an assessment may be made of the potential for adverse impacts. An activity which harasses a bald eagle or any listed species and disrupts its normal breeding, feeding, or sheltering activities to the extent that harm or injury results is a prohibited taking under the Endangered Species Act.

The high flows on the Kansas River in July 1993 and in May 1995 caused many new high elevation sandbars on the Kansas River. This flood-induced habitat was attractive to piping plovers (*Charadrius melodus*), federally-listed as threatened, and least terns (*Sterna antillarum*), federally-listed as endangered. The first documented nesting of least terns and piping plovers was in 1996 and 1997, respectively (Busby 1997). This was the first nesting of piping plover ever recorded in Kansas and the first time least terns were known to nest along the Kansas River. Since 1998, nesting locations of these two bird species have been monitored throughout the breeding season to determine productivity of the species (Boyd 2005).

Our office has worked closely with the Kansas City District Corps of Engineers (Corps) to monitor nesting tern and plover colonies on the Kansas River. We are involved in water release decisions made by the Corps in an attempt to avoid direct take of active nests. Beginning in 1997, the Service's Kansas Field Office staff has conducted boat surveys of the upper Kansas River, searching for tern and plover nesting colonies. Currently, the tern and plover nests nearest to the Topeka LFPP area are at Kansas River Miles 109 and 65. However, suitable habitat exists in the Kansas River within the Topeka LFPP area.

The State of Kansas lists several species as threatened or endangered as occurring in Shawnee County that are also Federally-listed species. These include the American burying beetle, Eskimo curlew, whooping crane and Topeka shiner. While these species may occur in Shawnee County, suitable habitat for them is not present in the project area and therefore they have not been included in this Section.

Migratory Bird Treaty Act

Under the Migratory Bird Treaty Act (MBTA), construction activities in prairies, wetlands, stream, and woodland habitats, including the removal of upland borrow, and those that occur on bridges (e.g., which may affect swallow nests on bridge girders) that would otherwise result in the taking of migratory birds, eggs, young, and/or active nests should be avoided. Although the provisions of the MBTA are applicable year-round, most migratory bird nesting activity in Kansas occurs during the period of April 1 to July 15, although some migratory birds are known to nest outside this period. If the proposed project may result in the take of nesting migratory birds, the Service recommends a field survey during the nesting season of the affected habitats and structures to determine the presence of active nests. Our office should be contacted immediately for further guidance if a field survey identifies the existence of one or more active bird nests that cannot be avoided temporally or spatially by the planned activities.

State Listed Species

Kansas State Law (K.S.A. 32-504, 32-507: effective May 1, 1981) requires persons undertaking or sponsoring publicly funded or State or Federally Assisted action which is likely to impact endangered or threatened wildlife habitat where they are likely to occur, to obtain a project action permit from the Secretary of the Kansas Department of Wildlife and Parks (KDWP) prior to initiation of such action. In addition to the federally-listed threatened and endangered species, the State lists additional species that may be of concern within the project areas.

The KDWP maintains a list of State listed threatened and endangered species and species in need of conservation (SINC). The following list of species was retrieved September 22, 2006 from <http://www.kdwp.state.ks.us/news/content/pdf/7035>. As these lists are periodically updated, the Corps should contact KDWP directly for the most current information at Environmental Services Section, 512 SE 25th Ave, Pratt KS 67124-8174.

State-listed endangered species in Shawnee County include American burying beetle (*Nicrophorus americanus*), Eskimo curlew (*Numenius borealis*), least tern (*Sterna antillarum*), peregrine falcon (*Falco peregrinus*), silver chub (*Macrhybopsis storeriana*), and whooping crane (*Grus americana*).

State listed threatened species in Shawnee County includes bald eagle (*Haliaeetus leucocephalus*), eastern spotted skunk (*Spilogale putorius*), piping plover (*Charadrius melodus*), smooth earth snake (*Virginia valeriae*), snowy plover (*Charadrius alexandrinus*), sturgeon chub (*Macrhybopsis gelida*), and Topeka shiner (*Notropis topeka*). In addition, the State has designated critical habitat for the bald eagle along the Kansas River corridor and for the sturgeon chub in the Kansas River (Jim Hays, pers. comm.. Sept. 25, 2007).

SINC species listed for Shawnee County include black tern (*Chlidonias niger*), bobolink (*Dolichonyx oryzinivorus*), Cerulean warbler (*Dendroica cerulean*), golden eagle (*Aquila chrysaetos*), Henslow's sparrow (*Ammodramus henslowii*), plains minnow (*Hybognathus placitus*), short-eared owl (*Asio flammeus*), southern bog lemming (*Synaptomys cooperi*), southern flying squirrel (*Glaucomys volans*), tadpole madtom (*Noturus gyrinus*), timber rattlesnake (*Crotalus horridus*), whip-poor-will (*Camprimulgus vociferous*), and yellow-throated warbler (*Dendroica dominica*).

EVALUATION OF ALTERNATIVES CONSIDERED

Previous alternatives considered included 1-foot incremental heightening of the existing levee system at five of the eight levee units located along portions of the Kansas River and Soldier Creek. The units that were considered for levee improvements were the North Topeka, Oakland, Soldier Creek Diversion, South Topeka, and Waterworks. Levee height was proposed to be increased 1, 2, 3, 4, or 5 feet maximum with a

corresponding widening of the levee base to accommodate the increase in height. The levee raises would have been accomplished on the landward-side whenever possible to maintain the present floodway cross-section.

The levee raise alternatives have not been brought forward and under the current proposal no new levees have been proposed for this project. The proposed improvements consist of land side underseepage berms, manhole foundation heel extensions, fill behind floodwalls, new pressure relief wells, and gatewell, sluice gate, and floodwall replacements. The Fairchild Pump Station will be abandoned in place, with removal of the above grade structure and filling of the below-grade structure and outlet lines with flowable fill. The Madison Street Pump Station will be removed and replaced. No concerns were identified in the Soldier Creek or Auburndale Units. The Corps has estimated the amount of needed borrow to be in excess of 281,000 cubic yards (cy).

The following is a list of the specific modifications proposed for the Topeka Levee system by unit and location.

Oakland Unit

- Station 64+00 to 80+00, install new land side underseepage berm. 6.5 feet of fill, 240 ft. wide, 70,000 cubic yards (cy) material.
- Station 75+50. Manhole requires foundation heel extensions to mitigate uplift pressures.
- Station 220+00. East Oakland Pump Station requires heel extensions to mitigate uplift pressures.
- Station 489+50. 2 ft. of additional fill required behind floodwall to meet sliding stability requirements.
- Station 489+81. 2 ft. of additional fill required behind floodwall to meet sliding stability requirements.

North Topeka Unit

- Approximately Station 165+00 to 189+00, install new land side underseepage berm. 7 feet of fill, 220 feet wide, 140,000 cy material
- Station 246+00 to 250+00 install new pressure relief wells. Need 6 wells spaced at 75 feet, each a length of 75 feet. The wells are to drain to a central manhole using a buried header system; the total discharge of the system is to be 1 cfs per well or 6 cfs total (2700 GPM). The drainage district will be required to pump the water down 1 foot below existing ground when the river is near the top of levee. A pad should be constructed on the slope for access. The railroad has a series of tracks just outside of the toe of the levee. Work may need to be done

inside of the footprint (temporary excavation for drilling access, header pipe system and manhole installation).

- Station 364+60. Fairchild Pump Station to be abandoned in place. Fill below-grade structure and outlet lines with flowable fill. Remove above-grade structure.

South Topeka Unit

- Approximately Station 22+00 to 48+00, install new land side underseepage berm. 5 feet of fill 100 feet wide, 71,000 cy material.
- Station 74+41 to 93+86. Remove and replace existing pile founded concrete floodwall.
- Station 69+22. Gatewell to be replaced as part of floodwall replacement.
- Station 75+62. Gatewell to be replaced as part of floodwall replacement.
- Station 86+09. Gatewell to be replaced as part of floodwall replacement.
- Station 86+55. Gatewell to be replaced as part of floodwall replacement.
- Station 16+07. Manhole requires heel extensions to mitigate uplift pressures.
- Station 84+10. Manhole requires heel extensions to mitigate uplift pressures.
- Station 84+10a. Manhole requires heel extensions to mitigate uplift pressures.
- Station 85+57. Manhole requires heel extensions to mitigate uplift pressures.
- Station 88+69. Riverside sluice gate to be replaced along with floodwall.
- Station 91+02. Riverside sluice gate to be replaced along with floodwall.
- Station 75+84. Install wall stiffener at Kansas Avenue Pump Station to meet required strength factor of safety.
- Station 86+00. Remove and replace Madison Street Pump Station.

Waterworks Unit

- Stations 0+78 to 7+00 and 10+00 to 16+50. 2 ft. of additional fill required behind floodwall to meet sliding stability requirements. Total of 1,272 linear feet of fill extending 5 feet out from floodwall centerline then tapered at a 1 on 3 slope.
- Stations 13+07 and 15+95. 2 ft. of backfill behind stoplog gap sidewalls to address sliding stability.

There are no concerns identified in the Soldier Creek or Auburndale Units.

The only alternatives under consideration concern the source of borrow. The Corps is considering the use of borrow from several sites riverward of the levees that would be in close proximity to the work sites or alternatively to use commercially obtained borrow.

If the Corps uses commercially obtained borrow it may likely come from permitted dredging operations in the Kansas River. Dredging for sand and gravel has been permitted on the Kansas River and in the recent past dredging operations were active near the project area. To address river bed degradation and other dredging-related impacts to the morphology and ecology of the river and impacts to other public and private interests the Corps implemented the Regulatory Plan for Commercial Dredging Activities on the Kansas River (1990). The Plan mandates that the maximum allowable reduction in the surface elevations of the riverbed is 2 feet for each reach of the river at which time it is termed a "dredged-out reach". At that point the dredging operation must move out of that particular river reach. Due to river bed degradation only one commercial dredger is still operating on the river in the Topeka area although another is seeking a permit to operate a dredge in another reach east of Topeka (Joshua Marx, COE, pers. comm.).

FISH AND WILDLIFE RESOURCES WITHOUT THE PROJECT

Much of the land in the project areas has been converted to urban uses and cropland. Existing wildlife habitat is scarce and generally low quality due to habitat fragmentation and replacement of native vegetation with non-native or low quality vegetation. We do not anticipate much change in land use, and therefore impacts to fish and wildlife resources, if the project does not occur.

FISH AND WILDLIFE RESOURCES WITH THE PROJECT

Grassland strips occurring on and adjacent to the levee and the toe would be temporarily impacted during construction grading, sloping, and grubbing for the seepage and stability berms. Impacts would be temporary but would cease to provide habitat to existing wildlife during project construction and for approximately two to three years after project completion or until the grassland vegetation is well established.

Riparian vegetation is the only significant resource anticipated to be impacted by the proposed flood control work. The few, remaining areas of native vegetation represent valuable wildlife habitat. Areas of native vegetation should be avoided. There are many areas of cropland in close proximity to the project sites, including within some of the proposed borrow sites. Work in the riparian areas area will displace wildlife that currently use the area due to disturbances from noise, dust, human activity, machinery and destruction of habitat. Depending on construction timing, this displacement could result in serious consequences to wildlife such as loss of reproduction and possible death of individual animals from accidents (crossing roads and unknown hazards in new areas), starvation, competition for other areas, etc. There is little refuge habitat in close proximity to the project area and available habitat is presumably at carrying capacity

which further reduces the likelihood of wildlife surviving the displacement and intensifies the competition for the limited habitat available. Although the temporal displacement may be relatively short, the repercussions could be long-term. Impacts to migrating songbirds are of particular concern. Existing wildlife travel corridors linking the borrow areas and other areas of suitable floodplain upstream and downstream of the borrow area should be maintained during project construction. Establishment of mitigation areas prior to the onset of project construction would lessen the impacts to wildlife from habitat loss.

Construction activities would cause temporary, short-term impacts to fish and wildlife from noise, dust; and the presence of workers and machinery. Runoff from construction areas, access roads, staging areas and unprotected fills could degrade water quality inside the levee system. Accidental spills of fuels, lubricants, hydraulic fluids, and other petrochemicals would be harmful to aquatic life.

Remaining wetlands in the project area are few and relatively small. Impacts to these wetlands should be avoided. In addition, the removal of fill from cropland areas has the potential to cause the loss of farmed wetland. Farmed wetland should be delineated within the borrow site and should be avoided if possible. If an unavoidable loss is incurred, the quantity and quality of the farmed wetland will determine the amount of compensation necessary to offset project losses. The wetland mitigation plan would be developed in coordination with the Corps, EPA, and KDWP. This plan should include site locations, time frames, construction plans, a monitoring plan, progress reports, and standards of success. This plan should be a condition of any permit issued for the project. Borrow operations could be used to create wetlands or aquatic habitats. The potential for borrow sites to be designed to enhance habitat should be initiated with the project sponsors and borrow site owners. The completed plan should be implemented regardless of whether impacted wetlands are classified as jurisdictional for purposes of the Clean Water Act.

MITIGATION DISCUSSION

The Service has established a mitigation policy used as guidance in determining resource categories and recommending mitigation (46 FR: 7644-7663).

We have determined that most of the wildlife habitat that would be affected by the raising of existing levees (levee footprints and easements) is in Resource Category No. 4 (habitats of medium to low value). For this category, loss of habitat value should be minimized.

Forested wetland and riparian woodland are consistent with Resource category No. 2 that is, habitats are of high value that are relatively scarce or becoming scarce on a national or regional basis. Forested wetlands have been found to support significantly higher abundance and diversity of bird species compared to upland forests (Brinson 1981).

Losses attributed to the project would require in-kind mitigation (replacement of habitat value lost with equal habitat values of the same kind of habitat as those eliminated). The cost of mitigating habitat losses should be included as a project cost. Mitigation for impacts to these areas should be included in the mitigation plan developed in cooperation with the Service, EPA, and KDWP.

The National Wetland Inventory (NWI) database indicates that wetlands exist within the project area. A jurisdictional wetland determination will be necessary if levee alignments or borrow areas directly impact wetlands. The quantity and quality of existing wetlands will determine the amount of compensation necessary to offset project losses. A wetland mitigation plan would be developed in coordination with the Corps, Service, EPA, and KDWP. This plan would include site locations, time frames, construction plans, a monitoring plan, progress reports, and standards of success. This plan would be a condition of any Section 404 permit issued for the project. The plan should be implemented regardless of the regulatory nature of the wetland. Impacts to farmed wetlands should be mitigated at a minimum 1:1 ratio. Minimum replacement ratios for compensatory wetland mitigation should be based on the following guidelines:

U.S. Fish and Wildlife Service, Region 6
Wetland Mitigation Policy Guidance (8/97)
Recommended Minimum Replacement Ratios

<u>Mitigation Type</u>	<u>Ratio</u>	<u>Type of Wetland Being Mitigated</u>
Advance Creation	1.5:1	forested, scrub-shrub
	1:1	emergent
Concurrent Creation	2:1	forested, scrub-shrub
	1.5:1	emergent
Advance Restoration	1.5:1	forested, scrub-shrub
	1:1	emergent
Concurrent Restoration	2:1	forested, scrub-shrub
	1.5:1	emergent
Advance Enhancement	3:1	forested, scrub-shrub
	2:1	emergent
Concurrent Enhancement	4:1	forested, scrub-shrub
	3:1	emergent

Whenever possible, we recommend upland trees within the construction right-of-way remain undisturbed. While the trees may be young now, they are closer to a mature and more valuable stage than newly established trees.

Trees at least 50 feet tall and /or 24-inches dbh riverside of the levees should be avoided. Removal of these trees may adversely affect the habitat of the bald eagle.

Under the Migratory Bird Treaty Act (MBTA), construction activities in prairies, wetlands, stream and woodland habitats, including the removal of upland borrow, and those that occur on bridges (e.g., which may affect swallow nests on bridge girders) that would otherwise result in the taking of migratory birds, eggs, young, and/or active nests should be avoided. To minimize impacts to birds protected under the MBTA, construction areas should be surveyed for the presence of nesting birds during the general migratory bird nesting season of March through August. Disturbance of nesting areas should be avoided until nesting is completed.

Vegetation clearing and construction related soil disturbances can cause sediment-laden runoff to enter waterways. To minimize impacts associated with erosion, contractors should employ silt curtains, coffer dams, dikes, straw bales or other suitable erosion control measures adjacent to floodplain water bodies or tributaries affected by the project. Construction related petrochemical spills can also negatively impact fish and wildlife resources. Therefore, measures should be implemented prior to construction to minimize the likelihood of petrochemical spills.

Invasive species have been identified as a major factor in the decline of native flora and fauna and their ecosystems. Invasive species of particular concern in Kansas include the zebra mussel (*Dreissena polymorpha*), Eurasian watermilfoil (*Myriophyllum spicatum*), purple loosestrife (*Lythrum salicaria*), Johnson grass (*Sorghum halepense*), sericea lespedeza (*Lespedeza cuneata*), salt cedar (*Tamarix spp.*), and reed canary grass (*Phalaris arundinacea*). Executive order 13112 Section 2 (3) directs Federal agencies to not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere and to ensure that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions. Proactive measures to prevent the inadvertent spread of exotic and invasive species would appear to satisfy this directive. Therefore we recommend the implementation of the following BMP.

All equipment brought on site will be thoroughly washed to remove dirt, seeds, and plant parts. Any equipment that has been in any body of water within the past 30 days will be thoroughly cleaned with hot water greater 140° F (typically the temperature found at commercial car washes) and dried for a minimum of five days before being used at this project site. In addition, before transporting equipment from the project site all visible mud, plants and fish/animals will be removed, all water will be eliminated, and the equipment will be thoroughly cleaned. Anything that came in contact with water will be cleaned and dried following the above procedure.

Section 2 of the Fish and Wildlife Coordination Act requires the Service to identify project related opportunities to enhance fish and wildlife. The enhancement recommendations discussed below refer to project related creation of wildlife habitat, over and above that required to mitigate losses attributable to project construction.

Native trees, grasses and forbs, noted for their high wildlife value, could be established along the landward and stream-side base of the existing levee system. Native vegetation often takes longer to become fully established; however when established, stands of native vegetation provide excellent soil binding characteristics, valuable wildlife habitat and require fewer maintenance costs. The Service, the Kansas Department of Wildlife and Parks, and the Natural Resource Conservation Service offer assistance programs and could work with the City of Topeka to develop vegetation management plans.

If agreeable to the project sponsors and borrow site owners, borrow sites could be designed and managed to enhance wetland and aquatic habitat, and recreational access.

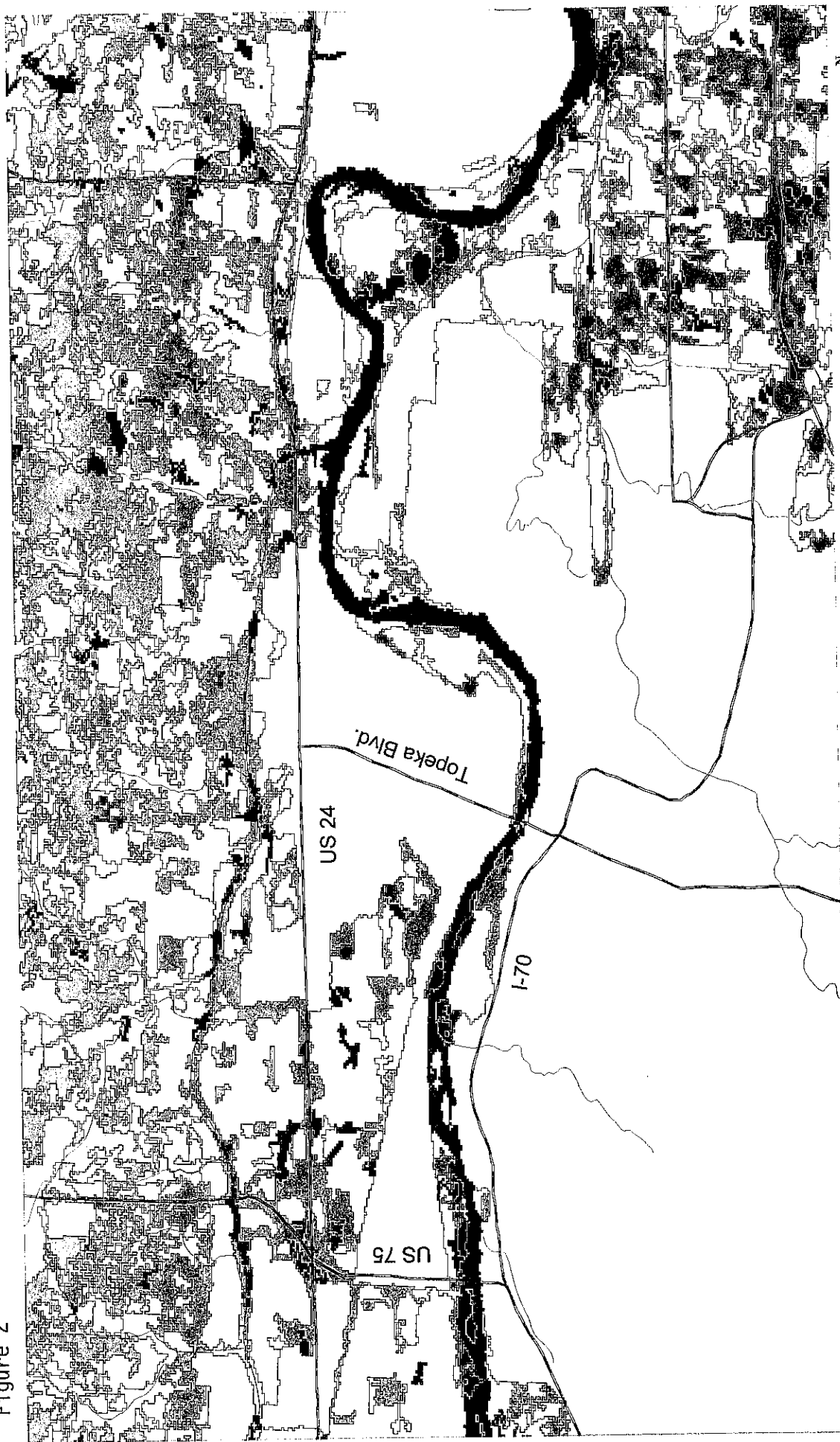
RECOMMENDATIONS

1. Riparian and wetland habitats should be avoided to the maximum extent practicable when selecting borrow sites for the proposed levee improvements. Compensatory mitigation should be undertaken for unavoidable impacts. Since channelization, levee construction and floodplain development have already resulted in dramatic loss of riparian and wetland habitats in the Kansas River basin within the project area, the Corps should focus on bare or cropland areas for borrow.
2. Levees and levee easements should be seeded with native, warm-season grasses such as buffalo grass (*Buchloe dactyloides*). Buffalo grass is a drought tolerant, perennial, native, turf grass that reaches a height of 8 – 10 inches.
3. The Corps should create wetland mitigation habitat to compensate for the loss of wetland acreage from construction of the projects in accordance with the FWS Region 6 Wetland Mitigation Guidelines, generally at a minimum of 1.5:1 ratio for emergent wetland and at a 2:1 ratio for forested wetland. If farmed wetland is directly impacted by borrow activities it should be mitigated at a 1.0 to 1.0 ratio.
4. Removal of woodlands and other native vegetation should be avoided where possible. If avoidance is not possible a mitigation plan should be developed in coordination with the U.S. Fish and Wildlife Service (Service), Environmental Protection Agency (EPA), and the Kansas Department of Wildlife and Parks (KDWP). Woody vegetation and native grasses should be replaced by establishing two acres of native vegetation for every acre impacted.
5. Best Management Practices to prevent the transport of invasive species to or from the construction sites should be included as an integral component of the project.
6. Establish native vegetation riverward of levee segments where riparian woodlands are sparse or nonexistent or where invasive species, i.e. reed canary grass, has become established.
7. All disturbed areas should be immediately planted with native vegetation following construction to prevent erosion and the establishment of invasive species.
8. The potential use of borrow sites for wetland and aquatic habitat enhancement and public recreation should be investigated with the project sponsors and borrow site owners. The City of Topeka is interested in developing a greenway and public access to the Kansas River within the project limits.
9. If possible, establish mitigation areas prior to the onset of impacts from the project to lessen the impacts to wildlife from habitat loss.

LITERATURE CITED

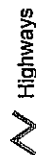
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Figure 2



TOPEKA LOCAL FLOOD PROTECTION PROJECT

Land Cover



- Highways
- Ash - Elm - Hackberry Floodplain Forest
- Bur Oak Floodplain Woodland
- CRP (Conservation Reserve Program)
- Cattail Marsh
- Cottonwood Floodplain Forest
- Cottonwood Floodplain Woodland
- Cultivated Land
- Freshwater Marsh
- Low or Wet Prairie
- Maple - Basswood Forest
- Mixed Oak Floodplain Forest
- Mixed Oak Ravine Woodland
- Mixed Prairie
- Non-Native Grassland
- Oak - Hickory Forest
- Pecan Floodplain Forest
- Post Oak - Blackjack Oak Forest
- Tallgrass Prairie
- Urban Areas
- Water

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